

The Market Revolution in America
*Liberty, Ambition, and the Eclipse of the
Common Good*

JOHN LAURITZ LARSON
Purdue University

 **CAMBRIDGE**
UNIVERSITY PRESS

Introduction

What Do We Mean by a Market Revolution in America?

At the end of its War for Independence, the United States comprised thirteen separate provinces on the coast of North America. Nearly all of 3.9 million people made their living through agriculture while a small merchant class traded tobacco, timber, and foodstuffs (flour, rice, livestock, salted meat, and fish) for tropical goods, useful manufactures, and luxuries in the Atlantic commercial community. By the time of the Civil War, eight decades later, the United States sprawled across the North American continent. Nearly 32 million people labored not just on farms, but in shops and factories making iron and steel products, boots and shoes, textiles, paper, packaged foodstuffs, firearms, farm machinery, furniture, tools, and all sorts of housewares. Civil War-era Americans borrowed money from banks; bought insurance against fire, theft, shipwreck, commercial losses, and even premature death; traveled on steamboats and in railway carriages; and produced \$2 to 3 billion worth of goods and services, including exports of \$400 million.¹ This dramatic transformation is what some historians of the United States call the "market revolution." For antebellum Americans, this revolution stood near the center of the experience of what happened to the United States during its grand experiment in republican government. For many modern historians, it does so still.

¹ *Statistical History of the United States from Colonial Times to the Present*, ed. Ben J. Wattenberg (New York: Basic Books, 1976), 239, 885.

ATLANTIC NETWORKS

The market revolution sprang from widely shared causes and conditions that surrounded American Independence and drew significant new energy from that revolutionary development. But to understand either the American independence movement or the market revolution that followed, we must first review certain features of the process of colonization. The rebellious British colonies – like other Atlantic provinces – owed their existence to commercial exploitation and exchange reaching back to the sixteenth century. Shortly after the famous voyage of Columbus in 1492, Spanish, Portuguese, French, Dutch, and finally British adventurers probed the “New World” (new to them, anyway) for riches and opportunities. Where they could, they stole gold and silver from indigenous people and enslaved the natives to mine more of the same. In most of the Caribbean and North America, however, colonization came to depend on coarser natural resources (fish and fur) and on slave-grown crops of tobacco and sugar. So it was profiteering through long-distance trade, by a relatively small class of merchants and adventurers, that drove colonial development from the earliest days.

The kind of merchant capitalism that flourished in this Atlantic economic community linked networks of African slave traders, island producers of sugar and wine, mainland planters, fur traders, fishermen, and farmers. Some still worked through state-sponsored firms such as the Royal Africa Company or the famous British tea monopoly, the East India Company; but by the eighteenth century, most were free agents seeking profit wherever they could. True commercial pioneers, these adventurous individuals rode transatlantic winds of supply and demand in a game of profit and loss that was altogether different from economic life inside their own countries. Over time, this new wealth pouring in from the colonies could not help but alter relations among the imperial powers and between the landowners of Europe (who once thought of themselves as the sole custodians of national wealth) and a rising class of entrepreneurs. In the English case, this resulted in a struggle between friends of the monarchy at “court” and “country” squires who pledged to defend ancient customs and traditions – including Parliament’s right to control royal spending. But the money and power to be had in the Atlantic commercial economy proved irresistible to governing elites. As a result, the early modern system

of merchant capitalism sank deep roots into the structures of British governance and set the stage for wrenching upheavals to come.

To shape and control these colonial networks, England and its rivals imposed systems of regulation based on mercantilist assumptions. Believing that real money (gold and silver) was a finite commodity, mercantilist policy makers tried to direct commerce in ways that brought control of the money into national hands (where kings and queens might deploy it – through armies and navies if necessary – in the interest of the nation-state). Competition pitted *countries* against one another (not individuals or firms), and the point of the game was to keep the flow of money away from one’s enemies. England’s many imperial wars with its Dutch, Spanish, and French rivals (1652, 1664, 1672, 1689, 1702, 1739, and 1754) all related to this goal and produced, by 1763, a state of effective British hegemony over the Atlantic commercial system.

What differentiates colonial merchant capitalism from its mature, modern successor is the extent of penetration of market forces and values into the daily lives of ordinary people. Capitalistic in many ways, New World commerce did not wholly transform the economies from which leading players ventured. Its impact on some Africans and indigenous Americans was dramatic and immediate, but colonial trade touched poor farmers in the provinces and most consumers back home infrequently until the middle decades of the eighteenth century. Cash prices, contracts, and speculation – all hallmarks of the capitalist system – could be found in the world of colonial merchants no matter how primitive the structures and instruments of their transactions. (Bills exchanged in a coffeehouse instead of a bank or bourse were no less binding or capitalistic.) But the vast majority of free provincials as well as Europeans played out their economic lives in local communities where markets and exchange continued to operate as they had for generations. “Just” prices, sometimes fixed by law, kept food and household necessities affordable; local producers and vendors dominated trade; and an individual’s good name and character ensured the support of neighbors regardless of fluctuations in distant, speculative markets. Even staple-crop planters, whose fortunes depended on long-distance market forces, often lived and kept their household books just as if they were country squires in rural England. Ironically, it was the slaves more than anyone who felt the sting of these early capitalist networks that reduced them to pawns at the base of colonial plantation commerce.

Supply and demand always threatened to derange local community markets, leading men and women into temptation from the earliest days in Jamestown and Boston; but these were not yet accepted as “iron laws,” nor did they always trump questions of justice, tradition, and brotherhood. In the seventeenth century, sumptuary laws had tried (in vain) to stop rude men with ready money from buying the costumes of gentility. Private contracts freely made were still found unenforceable if the outcome (perhaps unforeseen at the time of the agreement) struck authorities as patently unfair. Widows and orphans relied on entitlements as innocent victims of misfortune; men could be punished by law and custom for exhibitions of naked greed. There was an undeniable difference between the embedded commercial values of the early colonial markets and the anonymous cash transactions of nineteenth-century capitalism.

The eighteenth century appears to hold the fulcrum on which modern capitalism leveraged its way into Anglo-American culture. However humane and benevolent it seemed in retrospect, early provincial economic culture produced by the eighteenth century a certain restlessness in British North America. Colonists bought more imported manufactures to replace homemade articles and the products of local artisans. Gradually, sugar, tea, and tobacco found their way into larger and larger consumer markets. American trade grew enormously in volume and importance to the mother country. When it served their interests, Americans labored contentedly inside the framework of protection and promotion laid down by the Navigation Acts; the rest of the time, they bribed and cheated their way around the rules. Once their “starving times” were lost to memory, men and women now born in America (some not even of British parents) focused their energies on bringing the provinces up to speed with British fashions. Planters built country seats and landscape gardens in pale imitations of the English rural gentry. They sent their sons to study at the Inns of Court in London. Merchants in Baltimore, Philadelphia, and Boston furnished their urban palaces with fine furniture, carpets, and wall coverings, ate dinner off English china, and served their guests imported wines. Colonists devoured English books and periodicals. And during the imperial wars, they rose to defend as their own the glorious British Empire.

If Americans saw themselves as partners in the eighteenth-century British Empire, English governors and metropolitan commercial

patrons continued to treat them like dependent servants. American planters – landed gentry in their own minds – fell into the clutches of English and Scottish creditors who did not extend the same considerations they might offer great landed families in Britain. Seaport merchants lived off credits offered by London correspondents who could just as easily, without cause, call in or cancel their loans. Colonists created real new wealth, but England’s reluctance to allow local banking or expand local currencies left them struggling with so little ready money that Virginians set prices in pounds of tobacco. No matter how steeped they were in English country values, Britons in America had been forced from the start to accommodate long-distance market forces influencing the price of everything from cooking pots to servants and slaves. (It is hard to imagine that buying and selling Indians and Africans as workers – and sometimes sexual playthings – did not erode traditional values in the colonies.) Finally, entrepreneurial innovation, even in the smallest degree, rewarded American colonists with greater prosperity and happiness than careful attention to tradition or mercantilist regulations. Long before Adam Smith codified the principles of liberal political economy in *The Wealth of Nations* (1776), many Americans – not just merchants but also urban shopkeepers, market farmers, small backcountry planters, and certain skilled artisans – had begun to experience aspects of modern “liberalism.”

By the middle decades of the eighteenth century, commercial men in London and Glasgow and political leaders at Whitehall recognized the rising importance of imperial trade as a vent for consumer goods and not just a source of New World staples. Accordingly, they moved to close off “leaks” in the system and maximize the flow of wealth in ways that mercantilist theory prescribed – unaware (by and large) that it was leaks and lapses that accounted for much of the wealth pouring in from the provinces. Further, in the wake of two long wars, officials sought to ease the burden on taxpayers at home by capturing greater revenues from the parties they thought most benefited from imperial protection – the colonists. In other words, the governors of empire moved to integrate provincials who had grown accustomed to suiting themselves unseen by any regulators’ eyes. Precisely because mercantilist thinking placed the state in control of economic conditions, when economic conditions began to change in the mid-eighteenth century, colonists turned to *political* science to explain their discomforts.

ROOTS OF REBELLION

A quick series of events in the 1760s transformed these underlying features of colonial history into the crisis that resulted in the American independence movement. In 1760, George III succeeded to the British throne. Determined to rule effectively, the young monarch set out to drive from his court the corruption that had typified governance during his grandfather's reign. Alas, his "reforms" brought an end to the lax ways that American merchants understood as customary – and *right*. The quick passage of the Proclamation Act (1763, closing the mainland western frontier to trespassing settlers), the Sugar Act (1764, *lowering* duties but sharply increasing enforcement in the Caribbean sugar trade), and the Stamp Act (1765, imposing a small but novel direct tax on colonists at home) signaled new and forceful hands on the reins of power. Colonists perceived this new energy in government not as reforming but corrupt and tyrannical. Borrowing deeply from the "Old Whig" or "country" critics of influence peddling at court, Americans took offense at these policy initiatives. The new king and his ministers, they concluded, intended to sacrifice the colonists to gratify their own whim and fancy.

The case for revolution was hardly self-evident in 1765, and the leaders of the independence movement labored for a decade, interpreting events and orchestrating responses, to cultivate rebellion. For many colonial residents, changes in the markets resulted in lower prices and better selections on the shelves of country stores. Backcountry farmers and upland planters found Scottish tobacco factors ready to exchange their crops for cash and goods without the services of wealthy tidewater "grandees" who previously held them in chains of "friendship" (that is, dependency). Economic rationalization of the empire hurt provincial elites more than ordinary people, and the burden of new taxes – soon to be the pivot of rhetorical rebellion – was altogether trivial for most colonists. But American radicals spun out a different story in which the king and his lackeys, stuffed with colonial revenue and freed from Parliament's restraining hand, had embarked (like the tyrant Charles I) on a campaign of absolutism to subvert that glorious, balanced wonder of political equipoise, the British Constitution. Members of the House of Commons claimed to represent all the people of the empire, including colonial subjects; but any fool could see that the

people in *England* would abridge the rights of provincials if it served their convenience at home.

Viewed from the western end of the scope, the progress of this evil was shocking, and its ultimate end could not be in doubt. American elites – commercial men in Boston and New York, radical artisans in Philadelphia, planters in Maryland and Virginia – began discussing among themselves these dire prospects. Only one form of government they knew could frustrate this evil and survive in an imperfect world: republicanism. To America's revolutionaries, this meant rule by the people's representatives, who could not tyrannize the people because they shared with them a basic common interest. No sane man would tyrannize himself, and as long as the governors were drawn from (and returned to) the ranks of the governed, no durable, external schemes could gain any traction against the interests of the people. Independence would remove the immediate threat of enslavement through corruption, but only *republican* government could guarantee liberty (and with it, prosperity) forever in the newly formed states.

As luck would have it, Americans thought they were ready-made for republican government. If you overlook the Indians and slaves (a huge condition, yet one nearly all white colonists accepted), virtually all British colonists were commoners. Having no separate, hereditary ranks to accommodate, Americans met the first republican criterion: one universal common interest. Equally important was an independent citizenry, sustained by widespread ownership of property. Here again Americans seemed uniquely positioned: The vast majority owned land or a shop and a trade. That proportion diminished as one moved southward, but even where the labor force consisted primarily of black slaves (not included in such calculations), abject dependency among *white* households was nowhere near as common as in Europe. The final criterion, according to classical theory, was sufficient virtue that the people could set aside self-interest in favor of the common good. The heroic exploits of colonial founders – risking all to succeed while the rulers back home paid so little regard – indicated matchless virtue, at least in the first generation. And by the early 1770s, in the popular mind, the willingness of colonists to rebel against the greatest power of the age suggested an abundance of virtue still. In short, by 1775, when the shooting war began, America's leaders had translated economic grievances into a utopian quest on behalf of human liberty. Whatever

material ambitions underlay anyone's decision to join the patriot cause (and these were numerous and usually ambivalent), an ideological hymn to liberty and equality bound them together. The promise of republican government conjured up a vision of a future more "free" than anyone had known, even in the extraordinarily free societies of British North America.

Dissonance probably best characterized Americans' economic values as they entered the imperial crisis and the Revolution. They thought they were restoring traditional rights and customs even while they lived on the ragged edge of a competitive commercial empire. They had not yet read Adam Smith (when they did, many were appalled by his startling view of economic life), and they had not yet fully rejected the mercantilist principles by which their world had been governed for a century. Still, their experience *as lived* had taught them something about freer markets, innovation, and economic liberty. Their obsessive reading in the tracts of Whig country critics of the Georgian court convinced them that royal favorites, not deserving entrepreneurs, gained the most from government policy. When they cried out for liberty and equality, they instinctively imagined a greater degree of economic freedom as one of the objectives of regime change. Thus a revolution *intentionally* political fostered an economic revolution in its turbulent wake. At the same time, the conflict between virtue and self-interest – an ethical conundrum at the core of republicanism – marked many arguments in the generation after independence and lay at the heart of people's experience of the market revolution.

SEARCH FOR THE CAPITALIST SYSTEM

Finally, what of capitalism and the capitalist system? Historians and economists argue bitterly over the meaning of these terms and when they apply to early American society. Much of the quarrel can be attributed to precise (but different) definitions that make it possible to date the "rise of capitalism" to the 1620s, the 1740s, the 1790s, or the 1830s. A second line of controversy swirls around slavery and the nature of slave-based enterprise within a free-market system. Generations of historians, building on theoretical distinctions rooted in the writings of Karl Marx, portrayed the plantation economies of the southern colonies and states as fundamentally different from the mixed

commercial-agricultural systems found in middle and northern states. More recent students have called attention to hard-driving, man-on-the-make planters, especially in the new slave states of the antebellum West, and question just how "backward" slaveholders really were.

At the center of all these arguments lies the question: When did the cold calculus of the marketplace trump other considerations in the making of private decisions by ordinary individuals? Long ago, Marx predicted that market forces would displace sentimental, familial, religious, or humanitarian values in a mature capitalist system; but while the tendency has been in that direction, it remains unclear just when – if ever – such a total transition took place. Before the market revolution, there were markets, to be sure: Profits were taken, greed exhibited, goods produced and exchanged. But greed was not normative, and an individual's behavior might as often contradict as conform to the dictates of economic interest. After the market revolution, "hard-headed" economic logic sought to dominate the process of evaluating all things. Individual identity dissolved into anonymity, commitment into contract, vocation into work, a living into a wage. The transformation never was absolute or complete. Long after the market revolution, people continued (and continue still) to exhibit behaviors (labeled "irrational") that contravened the expectations of economists. But there must have been a tipping point in history before which people did not believe – or did not accept it as natural and inevitable – that the market should be the universal arbiter of interests. After that point, whether happily or not, people came to believe that social and material life likely would not (could not?) be otherwise. At that point, which may have lasted a generation, a year, or one "eureka" moment, people experienced the market revolution and entered an era of capitalist relations.

That market revolution is the subject of this book. It is this tipping point for which we search in the lives of antebellum Americans, when they came to believe (correctly or not) that impersonal market forces had disabled the fabric of personal, familial, and cultural connections by which people earlier had tried to mitigate the hard facts of material life. It probably does not explain every personal and political decision made during the antebellum decades, but this market revolution was on the minds of nearly everyone in the United States between the Revolution and the Civil War, and it colored (if it did not dictate) their reaction to a host of public issues ranging from banking and money to

bankruptcy, land policy, tariffs, manufacturing, democracy, and the expansion of slavery.

What follows are chapters that recount both the unexpected, overwhelming force of economic changes *and* the positive aspects that made it difficult for people who experienced the market revolution to know whether they were rising in a privileged class or falling victim to an economic juggernaut. Chapter 1 explores the impact of political liberation on a people already “free” by the standards of the day. The “first fruits of independence” included basic policy foundations regarding private property, law, contracts, money, corporations, and the limits of entrepreneurial freedom to act. Chapter 2 then re-creates the whirlwind of innovation and “progress” that left an entire generation, by 1860, literally gasping with exhilaration. Chapter 3 revisits the same antebellum decades to examine the consequences of all this accumulating “progress” as it restructured “life as lived” for individual farmers and their children, artisans and factory workers, clerks and entrepreneurs, women, immigrants, free blacks, Indians, and slaves. Much about these changes appeared as loss to persons experiencing them, yet not everyone recognized “progress” as the cause or connected the dots between innovations that brought them improvement and those that cost them independence or security.

Between Chapters 1, 2, and 3 fall brief interludes dedicated to the phenomenon known as the “panic.” Panic was the name for sudden economic downturns that later would be seen as recurrent features of the capitalist “business cycle.” In the early nineteenth century, they could be interpreted either as wicked and purposeful attacks on virtuous innocents by greedy evil-doers or as accidental shocks in a dynamic new system nobody quite yet understood. Severe panics returned periodically (very nearly every twenty years after 1819) until the onset of the Great Depression in 1929, since which time modern governments around the world have exercised policy leverage over natural business fluctuations. Because they created “hard times” – high unemployment, plummeting prices, credit contraction, bankruptcies, and other painful forms of failure – these episodes became flash points in the contemporary struggle to adjust to and understand the emerging capitalist system. If people could recall a single moment when the market revolution engulfed them, odds are that moment belonged to a panic event.

Finally, Chapter 4 examines efforts to explain how all the contradictory experiences of the market revolution could exist as true stories told by a single people. Not surprisingly, antebellum analysts, caught in the heat of immediate and painful changes, often chose sides and roundly condemned either the capitalist innovators or their critics among the farmers, workers, and other dependent classes. Later on, economists and social reformers probed for the roots of industrial America in order to craft (or deflect) policies intended to ameliorate social disruptions. Eventually historians weighed in with their own formulations, some tending to look with favor on the positive aspects of modernization, others lamenting the supposed virtues of a world that was being lost. By now, the literature is rich and feisty, constantly reenergized by present-day actors who champion the “forward” march of global capitalism, and by new generations of critics who wonder why, as the rich get richer, the poor, while a little better off, become so powerless over their own economic destinies.

It is my contention that, for Americans between 1800 and 1860, the benefits and costs of the market revolution presented a complex picture indeed. For most people, their allegiances – whether for or against “progress” – remained shallow, fraught with confusion, and often vacillated back and forth in the real-time experience. The result was a kind of vertigo that afflicted antebellum Americans and made the “tipping point” of the market revolution practically invisible to most individuals until, in hindsight, they recognized the difference between their future and a cherished past. Historians prefer to impose coherent narratives on the past because this makes their stories useful, meaningful, and satisfying. Unfortunately, the stories (inevitably multiple and contradictory) that accompany the rise of modern industrial capitalism resist such coherent telling. Intertwined as they are with political democracy and bourgeois material prosperity, they instead tempt us, like the serpent in the garden, with promises of freedom and knowledge beyond what we really can master.

New York, the Old Northwest, and the western counties of Virginia and North Carolina, begged their governments to help them gain access to lucrative markets. Time and again, frontiersmen complained about the "want of a market" as the "great evil" preventing local progress.⁶ Of course, at the bottom of the economic ladder there were men who preferred a subsistence living. Plantations in the new cotton South often were surrounded by subsistence farmers clinging to the hills and marginal lands. Such farmers may have raised a small patch of cotton or tobacco to help pay taxes, but they *could* make do without commerce and they tended to fear expensive public works as well as banks and corporations. Some backcountry voters in North Carolina rejected better roads because they thought roads made it easier for merchants to reach out and cheat them. Nevertheless, much of the upper South saw backcountry farmers and merchants pushing together for roads and canals against the resistance of tidewater planters who paid more taxes and wielded disproportionate power in state legislatures. Despite the antibank, anticorporation rhetoric indulged by Jacksonian politicians during the 1830s, internal improvements, paper money, and other instruments of commercial modernization were broadly popular with more than just malevolent capitalist elites.

This is not to say there were no misgivings about the shape and institutions of the new market-oriented economy, but rather to suggest that the progress of the market revolution often was welcomed by individuals and classes of people who might – and did – at the same time recoil from some of its implications. On its positive face, the new economy wore the aspect of a rising domestic marketplace in which all were welcome to participate and fortunes could be had by any man (or even woman) with ambition, industry, and a little bit of capital. For many Americans by the 1820s and 1830s, this seemed to be the essence of the revolutionary promise made manifest in economic liberty and personal wealth. In the eighteenth century – and even in the first generation after the Revolution – men often had found it necessary to be sponsored and endorsed by established community leaders before they could launch new careers or embark on business ventures with any hope

⁶ Quoted in Nathan Miller, *The Enterprise of a Free People: Aspects of Economic Development in New York State during the Canal Period, 1792–1838* (Ithaca: Cornell University Press, 1962), 7.

of success. But as networks of commerce expanded and institutions such as banks, wholesale firms, forwarding houses, and credit bureaus began to manage the flow of information among strangers, opportunities for entrepreneurs without patrons multiplied steadily.

LEARNING TO DEAL WITH STRANGERS

As much as it depended on improved transportation and communication, the rising American domestic market was not created or imposed by a single innovation or act of legislation. In a classic illustration of the principles explained by Adam Smith in *The Wealth of Nations*, thousand of buyers and sellers ventured out in search of each other and of personal gain in markets that presented an expanding universe. Competition and initiative characterized its dynamics, especially early on; efforts to control the flow of money, goods, or information – whether stemming from old-fashioned claims of local prerogative or new-fangled strategies to corner the market or distort its working – proved ineffective. In the China trade, where the information "float" ran forty to sixty days, American captains schemed to deliver instructions to resident agents before the ship had docked in hopes they could buy up tea before news of the latest "demand" hit the market. (By such shenanigans – plus occasional robbery and murder – Americans broke down the monopoly control of the British East India Company and brought reckless competition to the opium trade.) Closer to home, millers and butchers lost control of their "natural" local trade and accepted the price-setting leadership of larger urban dealers. Turnpikes invited private teamsters to use them, and when customers disliked the price or service, they turned to another hauler or did the work themselves. Taking umbrage at the sight of toll booths on what looked like public roads, many farmers and teamsters used illegal "turnouts" to bypass the gates, daring the "monopolistic" turnpike operator to take his customers to court.

Forwarding merchants in cities such as Pittsburgh traditionally had bound their country storekeepers, often through credit arrangements; but now, should a client grow restless, he could find another vendor in Philadelphia or Cincinnati, or a lender to supply him with cash so that he might shop with the "upper hand." Country customers found ready choices for disposing of their produce. They still ran up debts on the

books of the nearest country storekeeper, but if they did not like the prices quoted when they offered up their butter and eggs, each retained the option of taking his surplus on to the next larger market and clearing his accounts with cash. Steamboats called for freight, knowing that another boat would land the next evening, making it easy for the shipper to wait if he did not like the captain's terms. The steady elaboration of complex markets tended to flatten the hierarchies of "friendship" and "connection" that had governed economic life in the eighteenth century. Smaller players gained equal access to news and transportation, leaving middlemen no choice but to compete with each other on price and quality of service. As a result, millers, hog buyers, and cotton factors all found themselves offering (albeit reluctantly) the same terms to the least of their customers that they once would have saved for their "best" friends.

By the early 1840s, these developments had produced an astonishing circulation of goods inside of the United States. Freight rates for commodities had fallen dramatically: on land, from \$30 per ton-mile to something closer to \$20; on steamboats, from \$6 (upstream) to well under \$2; and canal rates ranged between \$2 and \$3 per ton-mile.⁷ Economic historians once suggested that interregional trade made possible by the transportation revolution allowed the antebellum sections to specialize — one in cotton, one in foodstuffs, and one in manufacturing. Subsequent research has shown this portrait to be exaggerated: Except for some of the densest cotton country in Alabama and Mississippi, most of the South remained self-sufficient in food until the late 1850s. Food exports from the Northwest did grow dramatically, but most of that produce shipped to New York and foreign markets.

With improved transportation, consumer goods (all sold on credit) flowed much more freely into agricultural communities. Frontier women retired their spinning wheels (or broke them up for kindling) and took to buying textiles from the store, bringing produce in exchange or paying cash saved from the annual sale of corn and hogs. Into the country came coffee, nails, window glass, mirrors, calico, lace trimmings, ready-made shoes, hats, blankets, kettles, books, and even musical instruments. Frontier planters in Mississippi and Alabama paid

⁷ Jeremy Atack and Peter Passell, *A New Economic View of American History* (2nd ed., New York: W. W. Norton, 1994), 148; Hunter, *Steamboats*, 658.

their original capital debts for clearing the land and setting up production, then imported by steamship carved woodwork, Italian marble mantels, French wallpaper, huge mirrors, fine furniture, pianos, carpets, and damask draperies for the pillared mansions that by 1850 announced the "importance" of families who had staked their all on the cotton frontier. Self-sufficiency as a goal was replaced by interdependence: Indiana farmers sold corn and hogs and southwestern planters sent cotton into world markets while northeastern manufacturers shipped cotton and woolen cloth to the farmers and planters who no longer raised sheep or flax for themselves. The progress of market penetration can be traced in the price differentials between Cincinnati (deep in the interior) and New York: This "distance tax" (if you will) on a barrel of pork dropped from \$9.50 in 1820 to just over \$1.00 in 1860; for flour, from \$2.48 to \$0.28; and for corn, from 48 cents to 27 cents.⁸

All this dealing with distant strangers was made possible by the evolution of business institutions and facilitators that took advantage of the vast interstate free-trade zone that was the United States. Federal law required protection of contracts freely made between residents of different states, and by the 1820s both custom and jurisprudence had secured the assumption that citizens of all the states were playing by substantially the same rules. After 1822, in the hands of Nicholas Biddle, the Second Bank of the United States functioned de facto as a central bank, stabilizing the American financial markets. As a result, into the early 1830s the number of state banks in the system grew slowly, and the dozens of currencies they issued could be exchanged — or "cleared" — easily. After 1832, when Andrew Jackson's personal vendetta cost the national bank its charter, tens of millions of federal dollars were transferred to state-chartered "pet banks" scattered across the country. The number of banks grew sharply again, especially after 1849, when a dozen states followed the lead of "free-banking" states such as Michigan and New York in permitting anyone to open a bank without special legislative approval. Considered by many then (and most historians since) to be a reckless free-for-all of "wildcat" banking, the free-bank era actually generated a flexible and expansive money supply that served the economy remarkably well. The free entry and exit of banks into local markets depoliticized the "money question" (a little) and may have

⁸ Atack and Passell, *New Economic View*, 168.

encouraged entrepreneurship independent of social or political connections. Force of habit and convenience continued to sustain the circulation of money except in moments of extraordinary crisis – such as the Panic of 1837 and the lingering depression after 1839.⁹

In New York, the moralistic and evangelical Lewis Tappan had developed a habit of keeping files on the personal character of his business connections. In 1841, he formalized this private gossip file into a credit reporting bureau: Tappan's Mercantile Agency. By 1851, some two thousand reporters gathered data on the debts, assets, character, marriages, and drinking habits of borrowers all over the Union. The service continued after 1858 as R.G. Dun & Company, and thanks to its existence, retailers, wholesalers, factors, millers, meat-packers, coastal importers, and large manufacturers wherever they lived could study the same information about potential customers and form responsible business judgments about persons they never had met. At the same time, insurance underwriters increasingly guaranteed cargoes in transit and inventories on hand from destruction, loss, or fire, allowing end users to assume somewhat greater transactional risks because they were covered from behind. Such services, coupled with a steady supply of dependable money, rendered anonymous dealings safer, more efficient, and far more comfortable than had been the case in even closely guarded colonial networks of friendship and connection.

Atop the whole emerging network sat New York City – a maze of wharves and warehouses, banks, brokers, merchants, insurers, appraisers, importers, manufacturers, and information peddlers, denser and more reliable than their counterparts anywhere outside of London and Glasgow. Having lured Liverpool's cotton buyers into their thriving neighborhood, New York's cotton merchants started bringing only samples north to the city, selling bales that subsequently shipped directly from Charleston or Savannah; only the money passed through New York hands. Foodstuffs such as flour either shipped from New York or referenced New York prices and quality controls. Imports headed for interior points landed in New York to get the best price, quickest turnaround, and best access to the web of domestic merchants who could peddle the wares. Cotton factors in Mobile, Atlanta, or Memphis found that they had little choice but to track prices in New York both for

⁹ *Ibid.*, 104–6.

outbound bales of cotton and for the incoming goods requested by their customers. By the last decade of the antebellum period – the era when railroads might have started to make a difference in commercial geography – New York had positioned itself so successfully that subsequent rivals never really stood a chance.

A THOUSAND CLEVER INNOVATIONS

While commercial interests assembled the framework for a burgeoning domestic marketplace, manufacturers steadily increased their own contributions to American economic growth. These were the first stirrings of the industrializing process; and even if they did not initially involve new machines or large-scale factories, they all shared common roots in technology and the processes of production. In the pre-industrial era, most things were made by skilled craftsmen – called artisans – working with their hands and hand tools. Master craftsmen typically owned their own shops and worked with the aid of a few journeymen (artisans in training) and apprentices (youngsters employed in odd jobs while they learned the “mysteries” of workshop production). The craft workshop was both a production center and a trade school: It made things, usually to custom order, and it produced the next generation of skilled craftsmen who carried on the industry. When local demand rose, it often was met not by the craftsman ramping up production, but by recently graduated “masters” opening new shops, effectively duplicating the means of production. Individual workmen knew every step in the production process and commonly worked on a piece from start to finish. No two products were exactly alike: Every piece was a “one-off” original.

Industrialization was a complicated process by which this regime of handicraft production gradually was altered to increase the productivity of capital and labor by *intensifying* output rather than simply multiplying the number of producers. One of the first techniques was division of labor, in which complex tasks were broken down into simple constituent parts and each part assigned to a worker who repeated it quickly and efficiently over and over again. Most of the gain came from routinizing movements, sometimes with the introduction of jigs or dies – templates that helped a worker repeat the same action to produce identical pieces. In some cases, routinization led to

the development of new tools to perform the work; if appropriate, extra power from animals, water, or steam could be added to tools, turning them into machines and introducing the process of mechanization. Once machines became precise and accurate, they could produce interchangeable parts to be assembled by someone other than the parts maker without much customization. Sometimes inventors found ways to control the actions of complex machines so that they yielded identical products without operator intervention – a kind of automation first realized in France in 1801 by the punchcard-reading Jacquard loom. Finally, whole nests of machines and specialized, subdivided workers could be gathered in carefully laid-out, power-driven factories where, at some point in the industrializing process, economies of scale produced a significant drop in the unit cost of the goods compared to the same product made in an artisan's workshop. At this point, industrial production effectively replaced the handicraft system, the volume of output soared, prices typically fell, quality often improved, and control over the workplace passed from dozens or hundreds of independent masters into the hands of a few capitalists who owned the factories, the raw materials, and the finished merchandise, and who paid wages to workers for their labor.

In early America, manufacturing simultaneously followed both the traditional developmental path *and* the early road toward industrialization. All the major cities in the revolutionary era boasted traditional “man-u-factories” of every description: shoemakers, tanners, hatters, tailors, carpenters, joiners, cabinetmakers, coopers, wagonmakers, wheelwrights, blacksmiths, silversmiths, gunsmiths, watchmakers – the list goes on. Smaller country towns contained more limited arrays of specialists, but even in rural backwaters one could find a farmer-craftsman capable of making shoes for the children, beds for the loft, and stools for the weary pioneer's butt. Even in colonial times, the pressure of rising demand almost always had outstripped prevailing supply for manufactured articles. As a result, innovative craftsmen who were willing to try new techniques of production found few barriers (no product laws or restrictive guilds) and ready rewards (eager consumers) for their troubles. At the same time, high geographical mobility produced hundreds of new settlements on the frontier, to be supplied, at least before the antebellum transportation revolution, by the spread of *traditional* handicraft shops.

Deprived of foreign manufactures off and on by turmoil in Europe and then by the War of 1812, American producers in the early 1800s had stepped up their output, with positive results. With the return of peace in 1815, the British dumped huge stocks of goods on American markets, and the highly capitalized American industries – cottons and woolens, iron and steel – begged for protection by import tariffs from the “unfair” competition of European producers. The next year, Congress obliged, and the United States began to encourage (albeit feebly) domestic manufacturing. What really stimulated production in American workshops, however, was the relentless surge in demand produced by the growth and extension of the domestic marketplace itself.

Take boots and shoes, for example, one of the hand manufactures to undergo significant reorganization without big changes in tools or machinery. In Lynn, Massachusetts, cordwainers manufactured shoes with the help of apprentices working in “ten footers” – small workshops attached to the shoemaker's home. As market pressures rose, a new class of “shoe bosses” took to buying leather and putting it out among the artisans on contract. Masters and journeymen cut the leather into pieces, and the women inside the home sewed the uppers together and returned them to the shop for lasting. Division of labor was the novelty here: Bosses specialized in leather procurement and distributed the materials, the artisans and women divided the tasks of assembly according to levels of skill, then the bosses collected the finished shoes and sent them to mass markets in the cities or down South. To meet rising demand, bosses bought more hides and recruited more willing shoemakers in and around Lynn. Where transport was cheap, shoes from Lynn squeezed out local handicraft shoemakers. Away from the main arteries of commerce, local craftsmen continued to thrive in small shops – but theirs was a reprieve, not a pardon. In time, the bosses drew parts of the process into central shops under closer supervision. By the 1850s, when the sewing machine made it possible to mechanize production, these proto-shoe manufacturers simply moved their outdoor workers into one common factory building. By then, the railroad also made it possible to distribute shoes pretty much all over the nation, closing off the older, traditional avenue of craft expansion.

“Putting out” systems similar to that of the shoe bosses drew other rural people into the cash nexus during the early nineteenth century. Palm-leaf hats, for example, brought semi-subsistence rural people

into the market economy. Weaved by hand, usually by women, palm-leaf hats were made of imported fronds “put out” by storekeepers, who then took finished hats in trade to balance people’s accounts at the country store. At first, this was simply a variation on the traditional barter of butter, eggs, flax, firewood, and other local produce, but by the 1830s and 1840s, palm hats became a significant means by which rural New England families – especially poorer families with many hands and few capital resources – generated incomes over and above what they could squeeze from their marginal farms. In the early 1830s, one storekeeper in southwestern New Hampshire was marketing 23,000 hats per year made by some 250 country laborers. Output more than tripled in the next twenty years as upward of 800 area farm families entered the palm hat trade.¹⁰ What had begun as supplemental work for the quiet times at home had grown into regular enterprise without which these families would fail.

Similarly, early New England spinning mills generated yarn enough to keep every farmer with a loom for miles around busy weaving cloth. Either men or women could make cloth at home whenever time permitted without sacrificing other household routines. Because they earned more for weaving than for many other tasks they might do, rural people took to using cash to satisfy consumer needs. Many took the ultimate risk of abandoning marginal farms and moving into textile villages where father, mother, and children all worked for wages paid by the factory owners. Over time, most weaving moved into mechanized factories where power looms magnified the output and supervisors exercised control over when and how fast operatives worked. What seemed at first to augment the rural New England economy eventually took it over.

Time itself became an issue of greater precision around the turn of the eighteenth century; early factories rang bells to announce the beginning and end of a shift, but an appointment to close a deal (at noon sharp!) was best kept with the aid of a timepiece. Most people could not afford fine brass clocks, imported from England or France, at a cost of \$50. In the late eighteenth century, some Connecticut craftsmen began making wooden movements for clocks, which opened a larger

¹⁰ Thomas Dublin, *Transforming Women’s Work: New England Lives in the Industrial Revolution* (Ithaca: Cornell University Press, 1994), 54.

market and set the stage for a true revolution in production. In the decade after 1793, in Plymouth, Connecticut, Eli Terry perfected a “hand engine” for cutting the teeth of the wooden gears and pinions that made it possible to build twenty-five clocks at one time. In 1806, he set up a “factory” with water power to turn the machinery and contracted with his retail peddlers to turn out four thousand clocks in three years. The price of a movement plummeted from near \$25 to \$4: Itinerants sold Terry’s full-size clocks, case and all, for \$25. The demand for handmade artisan clocks collapsed, and copycat factories popped up in half a dozen Connecticut towns. Terry then turned his attention to miniaturizing the clockwork, perfecting by 1816 the first “Pillar and Scroll” shelf clock, twenty inches high, which (at \$16) became the standard timepiece for the next generation. In less than twenty years, Terry had revolutionized his industry. In 1837, one of Terry’s former employees, Chauncey Jerome, developed a new clock-work made of stamped brass pieces that in turn put wooden clocks out of business. By the end of the antebellum era, Americans could buy a nice shelf clock for \$4 and a bargain model for 75 cents.¹¹ Now people could actually expect each other to *know* the time of day.

Time was money in the market economy, and money usually was paper. The burgeoning demand for banknotes, as well as stationary, forms, account books, journals, newspapers, and the other paper products required by commercial societies, was met in the early Republic by another set of technological breakthroughs. For centuries, paper had been made in mills close to good sources of pure water for power and for pulp. The process involved several discrete steps reflecting significant division of labor and specialized expertise, but into the 1820s the only machines were found in the “beating room,” where rags were shredded into fiber pulp. Subsequently, “vatmen” filled and drained the screens. Then “couchers” deftly flipped the soggy sheets onto drying felts, stacked one or two hundred such paper sandwiches, and squeezed them out with a screw press. The couchers then turned these sheets over to other hands, who separated the sheets from the felts; hung them up to dry; and then sized, smoothed,

¹¹ Chauncey Jerome, *History of the American Clock Business for the Past Sixty Years, and Life of Chauncey Jerome* (orig. 1860; e-book Project Gutenberg #12694, ed. Robert Shimmitt, 2004); John Joseph Murphy, “Entrepreneurship in the Establishment of the American Clock Industry,” *Journal of Economic History*, 26 (1966): 172–4.

trimmed, sorted, counted, stacked, and wrapped the sheets for delivery. Several towns in Berkshire County, Massachusetts, specialized in paper manufacturing, and around 1827, imported machines began appearing in these mills, eliminating more and more of the skilled handwork.

Mechanization proceeded gradually in the Berkshire paper industry in the context of extensive entrepreneurial reorganization of the business. If the fine source of clean water, well-developed networks of rag collectors, and existing communities of skilled workers first made these mills profitable, improved transportation (steamboats on the Hudson, the Erie Canal, then the arrival of the railroads) triggered market expansion, especially in New York City, that tempted Berkshire paper manufacturers to grow and improve. The steady adoption of "labor-saving" machinery at first improved the working lives of Berkshire papermakers and boosted both the quantity and quality of the paper produced. Local sources of rags became inadequate, and soon these country firms were importing bales of rag-stock from New York and even Europe, burrowing deeper into market economy all the while. In 1827, the Lafflins of Lee, Massachusetts, installed the first "cylinder" machine that actually formed a continuous roll of paper from the pulp. Market-savvy decisions by several independent manufacturers continued to feed the growth of the business until the 1840s and 1850s, by which time the widespread adoption of the superior (and more expensive) Fourdeinier machinery brought the rag paper industry to maturity.

Innovation in paper manufacturing primarily was driven by the explosion of paper use, especially for commercial purposes. Organized as it was in multiple small firms, the Berkshire industry succeeded in filling demands for a wide variety of specialty papers – for banknotes, writing paper, legal documents, stock and bond certificates, and book-keeping supplies. The fragmentary nature of demand for many kinds of finished product kept antebellum mills from enjoying the huge economies of scale that later rewarded giant chemical wood-pulp paper manufacturers. Instead, innovations and machines yielded modest gains one after another without displacing wholesale the need for skilled hands and clean water. As New York City became the commercial hub of the United States, its paper suppliers stepped up to meet demand; in response, New York simply grew bigger and more demanding. Because commerce involves transactions between two parties or more, New Yorkers' addiction to commercial paper infected their

customers everywhere. Once the railroads locked in the primitive networks of antebellum commerce, paper products took their natural place alongside other manufactured goods in the flow of merchandise across the country.

Commerce also stimulated journalism, which in turn required abundant sources of cheap paper to churn out newsheets dedicated to prices, markets, advertising, technology, and business information. American printing and publishing already had gone through one revolution by the early nineteenth century: The creation of popular republican governments had caused an explosion in political printing beginning in the revolutionary era. In Philadelphia, the number of printers and their output nearly doubled between 1770 and 1790 and doubled again by 1805.¹² Printers scrambled to ramp up production, exploiting apprentices and unskilled labor in place of proper journeymen – which set off some of the earliest labor confrontations in the new United States. Newspapers sprang up all over the country, and thanks to the 1792 Post Office law, they were exchanged among editors free of charge. Eventually some journalists took aim at a regional or national audience. Joining Hezekiah Niles's *Weekly Register* (started in 1811), we find Arthur and Lewis Tappan's *New York Journal of Commerce* (1827), D. K. Minor's *Rail Road Journal* (1831), Freeman Hunt's *Merchant's Magazine* (1839), J. D. B. DeBow's *Agricultural Review and Industrial Monthly* (1846), not to mention consumer-oriented periodicals such as Louis A. Godey's *Ladies Book* (1830) and general news magazines such as *Harper's* (1850) and *Leslie's Weekly* (1855).

The supply of cheap and plentiful paper solved only half the problem for early American printers: The technology of printing itself remained a serious bottleneck. The standard hand presses from the revolutionary era produced no more than two hundred sheets per hour, severely limiting both the size and circulation of papers. By the late 1820s, new machine presses cranked out one thousand sheets per hour and soon steam presses multiplied *that* number by a factor of five or six! Historians credit the convergence in the 1830s of steam presses, new paper-making technology, chemical bleaching (to make paper from

¹² Rosalind Remer, *Printers and Men of Capital: Philadelphia Book Publishers in the New Republic* (Philadelphia: University of Pennsylvania Press, 1996), 153–7.

colored rags), improved transportation, and mass-market journalism with transforming the tiny local cells of radical Yankee abolitionists into a noisy sectional movement. The appearance in Charlestown, South Carolina, of copies of William Lloyd Garrison's fire-breathing abolitionist sheet, *The Liberator*, helped set the stage in the early 1830s for direct confrontations between southern states and the federal government.

One hallmark of the industrializing process in America was the widespread substitution of iron and steel for wood in the construction of tools and machines. Since the early colonial period, Americans had craved locally made iron products for the simple reason that they were heavy and expensive to import. Raw "pig iron" was made in a furnace located near ore deposits and hardwood forests for making charcoal (the fuel preferred for smelting iron). Some molten iron was cast at foundries into canon, anchors, blacksmith's anvils, hollowware (pots and kettles), and mill and ship's findings; the rest was hammered into wrought iron bar from which other iron products were made. In 1800, most iron consumer products still were made to order by thousands of local blacksmiths, who manufactured everything from kitchen tools to plow shares, axes, door hinges, wagon tires, and lantern hooks. The tools of the smithy were simple: a forge and bellows for heating the iron, a hammer and anvil for pounding, and a variety of chisels and dies for cutting and shaping hot pieces of iron bar.

Exploding demand for nails, hinges, iron straps, shovels, plows, and other metal wares encouraged innovative smiths to create dies and jigs for producing hundreds of nearly identical copies and to harness water power to drive their bellows and operate trip-hammers capable of pounding out far greater quantities of red-hot iron than even the burliest blacksmith could handle. One humble beneficiary of early American inventive energy was the ax, an indispensable tool for deforesting North America that acquired its modern shape and form by the 1830s. Another was the common nail – originally wrought one at a time by a blacksmith but after 1780 produced on various hand-powered machines for cutting nails from iron plates. Ezekiel Reed of Bridgeport, Connecticut, is credited with the original breakthrough, but as so often was the case, many hands – perhaps dozens – were employed trying to improve nail-making machines. Finally, in 1807, Reed's son, Jesse, fashioned a device that could cut and head nails in a single operation. Purchased and installed in two factories by Boston

merchant Thomas Odiorne, Reed's machine quickly set the standard for mechanized nail manufacturing in the antebellum decades, and mass-produced nails hit the market just in time for the housing booms that occurred after the Panic of 1819 and the opening of new transportation routes.

Another site of significant creativity and innovation was the manufacture of small firearms. Either imported from abroad or custom-made by skilled gunsmiths, firearms before the Revolution were comparatively expensive, sometimes finely worked, and never exactly alike. As with so many things in the early United States, post-revolutionary demand sent buyers – especially the federal government and underfunded new state militias – searching for cheap, reliable guns. In 1794, at the site of a revolutionary-era weapons depot in Springfield, Massachusetts, Congress established the first federal armory, where forty-odd craftsmen turned out about 250 muskets per month. Demand pressure fueled by appropriations of ready money from governments to purchase thousands of arms stimulated managers at Springfield and another federal armory at Harper's Ferry, Virginia, to adopt or invent elaborate divisions of labor, water-powered machines, and ever-more standardized components. Independent producer Eli Whitney contributed further to the mechanization of gun manufacturing. By the early 1820s, the armory at Harper's Ferry made ten thousand muskets per year, and Springfield even more.¹³ In the 1840s, Samuel Colt perfected the mass-produced revolver that would "win the West" in the hands of Texas Rangers. (It won him a prize at the international exhibition in 1851 at the Crystal Palace in London.) Although dozens of craftsmen and inventors contributed to these innovations, Whitney, Colt, and the American arms industry famously took the credit for "inventing" the modern "American System" of manufacturing using power, machines, and interchangeable parts.

Precision machinery made it possible to make small arms and other mechanisms out of interchangeable parts, but where did precision machinery come from? The answer could be found in the textile industry, where the earliest machine builders in America found themselves quickly required to repair and perfect the complicated implements that

¹³ Merritt Roe Smith, *Harper's Ferry Armory and the New Technology: The Challenge of Change* (Ithaca: Cornell University Press, 1977), Table 1, 342.

filled the earliest cotton factories. David Wilkinson set up a machine shop near Samuel Slater's first mill in Pawtucket, where he constantly improved both the textile machinery and the devices with which he made such machines. (In 1798, for example, he invented a slide-rest lathe for cutting screw threads.) The rapid deterioration of wooden machinery created powerful incentives to fashion equipment out of brass, iron, and steel, which required more precise fabrication of hard metal parts. Improved grinding and milling machines, drills, metal planes, and machine tools of all types poured forth from workshops in France, Great Britain, and America. These innovations allowed toolmakers to perfect rough castings and fit components to the narrow tolerances required for durable complex mechanisms running at ever-faster speeds. Everything from clocks and watches to farm machinery and railway locomotives benefited over and over again from the constant improvement of the tools for making machines.

Innovations such as these resulted from the efforts of dozens, maybe hundreds, of clever individuals striving to solve irritating day-to-day problems within the systems of prevailing technology. But innovations did not take root and transform whole industries or interlocking systems until calculating individuals (maybe the inventor, maybe not) found ways to make inventions commercially successful. Problem solving plus profit seeking: That seemed to be the winning combination. The presence in the early United States of such a multitude of free agents both in the technical trades and in the entrepreneurial community helps explain the timing of this explosion of creative development. Neither the inventors nor the entrepreneurs necessarily saw themselves engaged in the construction of complex new systems; indeed, their blindness to the big picture doubtless made it easier to celebrate each little triumph without taking stock in the cumulative impact. What legal historian J. Willard Hurst famously called the "release of energy" that followed American independence helped make possible this flourishing of tinkers, while the paucity of organized, traditional, legally protected "vested interests" made it difficult to stand in the way once an upstart brought forth another tidbit of "progress."¹⁴

¹⁴ James Willard Hurst, *Law and the Conditions of Freedom in the Nineteenth-Century United States* (Madison: University of Wisconsin Press, 1956), 3.

LINKAGES AND SYSTEMS

Textiles led the way to large-scale mechanization and mass production in manufacturing as cotton and wool mills spread throughout New England. At first these were typically small firms — partnerships of merchant capitalists who placed between \$10,000 and \$30,000 into the hands of skilled craftsmen (also partners at first, but over time increasingly hired managers) who built, installed, and oversaw the use of the machinery. Bound to locate near convenient water-power seats, many of these small Slater-style mills were built at rural sites that required the owners to install not just a factory but a town as well. To recruit a workforce of women and children, Slater found that he had to lure whole families with convenient rental housing, farm work for the husbands, company stores, churches, and Sunday schools. Marginal farmers traded agrarian poverty for real cash wages and the promise of a rising standard of living. The mills grew slowly before 1808, but the disappearance from American stores of British-made textiles between 1808 (the Embargo) and 1815 (end of the War of 1812) created boom conditions during which cotton manufacturing more than tripled in New England. Even before the rise of power weaving and integrated factory production, cotton textiles employed between ten thousand and twelve thousand wage workers.¹⁵

Technological evolution, market pressure from price competition, and the possibility of harvesting economies of scale created incentives for further innovation in the textile industry. Francis Cabot Lowell of Boston visited integrated factories in Lancashire and Scotland and returned in 1813 to introduce their model of industrial organization at Waltham, Massachusetts. Since the perfection of mule-spinning machinery in the 1790s, weaving had been the big bottleneck in textile production. Lowell dreamed of a large-scale firm that brought the whole process, from "breaking" the baled cotton to finishing the cloth, into one commercial operation. He secured a corporate charter from the state of Massachusetts, partly to facilitate capital formation, partly to gain the endorsement of the commonwealth for his potentially revolutionary enterprise. In 1814, the resulting Boston Manufacturing

¹⁵ *Statistical History of the United States from Colonial Times to the Present*, ed. Ben J. Wartenberg (New York: Basic Books, 1976), 139.

Company began turning out coarse, cheap, uniform cotton cloth ("slave cloth," it would be called). The return of peace in 1815 and the subsequent flood of cheap British textiles into American markets made the timing of Lowell's experiment especially fortunate. Mill owners great and small petitioned Congress for tariff protection, which they received in 1816, but Lowell's integrated enterprise proved better situated to weather the storm than did the myriad Slater-style firms. The dramatic success of the Waltham plant led its investors to venture a much larger establishment on the Merrimack River at a new town they named Lowell. Here they erected an enormous water-power facility and arranged huge factories around it to create the first American industrial city. The factories at Lowell turned out not only great quantities of cotton cloth but also whole sets of new textile machinery with which competitors opened additional factories all over New England. As mechanization and integration progressed, total factory employment in cotton soared to 122,000 by the time of the Civil War.¹⁶

Not wanting to stir up negative visions of English working-class degradation, the entrepreneurs at Lowell quite intentionally recruited young, unmarried women to work in the mills and live in carefully chaperoned boarding houses supervised by their employers. To these "mill girls," the arrangement offered cash wages, leisure-time activities, excitement, independence, the company of peers, and a temporary escape from life in a rural farmhouse crowded with overweening parents and younger children. To the parents of the girls, the company offered assurances that the environment would be wholesome and chaste, while their daughters' wages allowed a little cash to flow back to hard-pressed Yankee farms. The arrangement was presumed to be temporary: Cash saved would enhance the marriage prospects of girls who in a few years hoped to return to the country and marry the sons of farmers when their patrimonies matured. In this way, the large-scale industrial city took root in an American social landscape that did not freely welcome it. Once installed, the logic of integrated production, economies of scale, and the pressure of price competition tempered the fabric of this new industrial system, and it began to exercise a powerful influence not just on Lowell but on all the other textile factories – including the quaint rural village operations designed on the Slater model.

¹⁶ Ibid.

Too much can be made (and *has* been made) of this quasi-utopian story of manufacturing at Lowell. Manufacturing, including textiles, grew apace in many American cities while evincing neither the charm of the picturesque "mill village" or the benevolence of Lowell "girls' clubs." In the three decades after 1815, New York City became the most productive manufacturing center in the United States thanks to the dramatic expansion of "manufactories" and urban putting-out networks employing tens of thousands of working people. Straddling the polar examples of Lowell and the Slater-style village mills, Philadelphia's textile industry comprised small family firms or partnerships, lining the banks of the Schuylkill River northwest of the city center and the Delaware River north into Kensington, but also scattered about the metropolitan area. By 1820, some thirty-nine firms, each employing anywhere from six to two hundred workers, produced checks, gingham, plaids, drillings, bagging, hosiery, duck, twine, trim, and fringes. Thousands of skilled handloom weavers worked in backyard shops, making cloth from yarn they purchased outright from the spinning mills. As was the case with boots and shoes, hats, nails, clocks, and firearms, textiles for mass consumption became steadily more standardized and cheaper, and returned a slimmer margin of profit as industrialization proceeded. But in Philadelphia, the decentralization of entrepreneurship, together with the broad range of specialized products produced, kept skilled artisans alive and small firms viable throughout the antebellum period, resulting in a middle path toward industrialization that one historian calls "proprietary capitalism."¹⁷

By the middle of the 1830s, the shine was fading visibly from the textile revolution. Total value and quantity of goods manufactured climbed steadily, but price competition and capital demands for expensive new technology produced razor-thin profit margins. The big cotton barons, more likely heads of corporations now than partners or sole proprietors, cut wages and lengthened hours, raised rents, eliminated "perks" that ran up overhead, and began to resemble the industrial "Gradgrinds" for which contemporary England was famous. A bitter strike at Lowell in 1836 (discussed in Chapter 3) punctuated the

¹⁷ Philip Scranton, *Proprietary Capitalism: the Textile Manufacture at Philadelphia, 1800-1885* (Cambridge, UK: Cambridge University Press, 1983), 83, 97-9.

change of mood. In Slater-style villages, once-independent yeomen found their women and children working for lower rates while their own agricultural employment – a luxury peripheral to the mill owner's interests – disappeared. Indebted to their employers for store credit and past rent, such families could neither bargain nor protest, nor even escape their employers' grasp. At Lowell, long hours and declining living conditions left girls haggard and worn, while rising rents consumed what savings they had hoped to lay aside. The farm boys of their dreams found younger women still at home ready enough to be their brides, leaving some unmarried middle-aged women "spinsters," potentially for life. Desperate for cheap, tractable workers, mill owners gradually turned to immigrant workers, whose expectations sometimes were lower, less rooted in artisanal traditions or in American revolutionary promises of liberty and social equality.

Cutthroat competition, not community standards, set the price of yarn or cloth. Factory masters could no more ignore the effect of market forces on their inputs than could the workers when they looked in their pay packets. Industrialization had transformed the textile industry, and there quite literally was no turning back. Tens of thousands of consumers had given up the tedious household production of cloth; other tens of thousands had traded farming or other pursuits for employment in textile factories. The final impact of industrial production was just as profound (and irreversible) as the introduction of guns, cloth, and steel edge tools to pre-contact Native Americans. And like the Indians, American consumers became dependent on goods and services they did not – and could not – provide for themselves.

By the 1830s, metal machines were replacing wood in nearly every application, and machine shops stood ready to tackle problems associated with making large-scale equipment. Harvesting small grains was one of the most important challenges, and in that decade a Virginia blacksmith, Robert Hall McCormick, and his sons began experimenting with a mechanical reaper. In 1837, Cyrus McCormick patented a workable horse-drawn reaper that could be operated by two men. McCormick and his brothers continued to perfect the ungainly contraption into the 1840s, finally building a factory in Chicago in 1847 for the purpose of mass producing their machine. By this time, John Deere had perfected a steel plow (1837) that made it easier to break the

tough sod of the tall grass prairies in Illinois and Iowa. Level ground and larger fields – plus the arrival of railroad transportation on the prairies – made this expensive equipment more feasible for farmers by the 1850s. Even so, it took the Civil War's spike in demand, coupled with the drain of manpower into the army and the development of companion machines (especially hay rakes and seed drills), to secure the development of horse-powered mechanized agriculture.

Steam engines – both locomotives and stationary power plants – also matured after 1830, reaching by the 1850s relatively modern, recognizable forms that allowed their widespread adoption by railroads and manufacturers. By 1845, steam locomotives had replaced horse power on all the nation's railroads, thanks to the efforts of determined inventors such as Laomi Baldwin of Philadelphia. A jeweler by trade, Baldwin had opened a machine shop in 1825 that made bookbinding tools and calico-printing cylinders. Steam power was something of a hobby at first, but in 1832 he demonstrated his first practical locomotive ("Old Ironsides") and within a decade he was known as the leading producer of railroad locomotives. Rival engine makers took heart, the pace of innovation quickened, and steam power – seen for a generation primarily on boats – took up residence in the urban industrial landscape. By the mid-1840s, locomotives chugged in and out the centers of most northern cities, while stationary engines liberated manufacturing from its dependence on rural water-power seats. The adoption of special grates made it possible to burn Pennsylvania's hard anthracite coal, which greatly multiplied the energy available for home heating, heat-using industries, and transportation as well. Within another decade, smoke and noise had altered the urban scene (not for the better), and these twin hallmarks of the modern capitalist transformation took root in the American experience.

Urbanization, itself a function of industrialization, likewise became a stimulus as ever-larger concentrations of workers required housing, furniture, carpets, light, heat, food, fuel, housewares, clothing, transportation, and entertainment. Overwhelmed with opportunity, house carpenters modified time-honored construction techniques (and the respectful divisions of labor that separated carpenters from joiners, cabinetmakers, and other ancient specialists) in order to throw up houses fast enough to answer burgeoning demand. Balloon frame construction (hollow walls constructed of light studdings instead of heavy

framing timbers, on which were “hung” rafters and floor joists) made the biggest impact, allowing builders to close in a house in record time, making use of prefabricated windows and doors. (Alas, such houses burned down with astonishing speed as well.) Retail merchants of every description crowded the growing cities, testing the waters of demand (calculating) and forwarding orders to whichever innovative producers they thought could fill them on time. Butchers, bakers, and vendors of produce, dairy products, whisky, beer, and rum proliferated, boosting the demand signals reaching their suppliers: millers, milkmaids, fish mongers, brewers, distillers, and the growers of vegetables. Cartmen hauled firewood in and horse manure out day after day in thankless succession. Acceleration in each occupation fostered acceleration in others, forward and backward, until the rhythm of life itself seemed to increase with each passing hour. Towns filled with strangers; strangers grew rowdy in taverns and pubs; crime, disorder, and irreligion became epidemic. All of this brought out howls of despair from “respectable” middle-class merchants and manufacturers, who in turn moved to quieter neighborhoods, bought new houses and things like carpets and pianos that marked their escape from center-city squalor.

FACTORIES IN THE FIELDS

Economic growth in a market economy needs more than acceleration to become self-sustaining, and the prime mover behind American prosperity in the nineteenth century remained agricultural produce – especially slave-grown cotton. Between 1793 (when the cotton gin made it possible to process short staple cotton) and 1850 (when the census first recorded the data), some 30 million acres of land were brought into production in Georgia, Alabama, Mississippi, Louisiana, Arkansas, and Texas, mostly dedicated to cotton.¹⁸ Roughly 1.3 million African American slaves powered these new “factories in the fields” (half the slave population of the United States), and while they gained a great deal of their own “fuel” from food grown on the plantation, southern staple-crop specialization also profited partly because

¹⁸ Michael Williams, *Americans & Their Forests: A Historical Geography* (Cambridge, UK: Cambridge University Press, 1989), 119.

of meat and grain surpluses flowing out of the family farms of Pennsylvania, New Jersey, Virginia’s central valley, and the Old Northwest. Ambitious planters hacked their way through the cotton belt in the space of a single generation. In the process, they displaced seventy-five thousand Indians – Cherokee, Choctaw, Chickasaw, Creek, and Seminole – and clear-cut miles of old-growth timber.¹⁹ Most American cotton wound up in British industrial hands, but the demands of the burgeoning South for food, shoes, clothing, tools, transportation, commercial services, and investment capital yielded the same kind of growth pressures inside the United States that had swelled the fortunes of the British Empire in the last decades before the Revolution. At the same time, rising domestic markets steadily lowered the “cost” of pioneering on the cotton frontier by bringing convenient goods and services to new plantations within a few years – or even months – of their creation.

Cotton plantations themselves remained technologically simple throughout the antebellum period, with the single exception of the all-important cotton gin. Forests were cleared by slaves wielding axes, stumps were burned, and roots were grubbed out with shovels and hoes. New fields were plowed with single-bottom equipment drawn by one or more mules. Planting was done by hand, as was the periodic weeding (“chopping”) with hoes that helped give the cotton plant its priority claim on water and soil nutrients. Harvest was the most labor-intensive part of the process: Phalanxes of slaves, dragging long bags, moved through the ripened fields, prying the valuable fluff from its boll, now split, dry, and razor sharp. How carefully this was done affected the value of the product, because cotton stained with blood from the fingers of the pickers or full of trash and hulls from careless handling commanded a lower price at the local exchange. Back in the plantation yard, the cotton gin removed seeds and debris before the lint was pressed into bales and wrapped with hemp bagging. Now the bales were ready to be stacked on a steamboat and started on a journey to Lowell or Liverpool. As the cotton culture moved westward, the size of cotton fields increased, but the process changed little between 1800 and the Civil War. Few economies of scale advantaged the larger planters over their

¹⁹ Wattenberg, ed. *Statistical History*, 24–37, 460.